

An alternative way to construct and to evaluate educational software

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Background. Several authors have presented educational softwares using multimedia in many subjects in Medicine as an innovation in medical education. They describe specially electronic books or atlas of medical images.

The authors propose an alternative way to construct educational software that although based on nonlinear programmed instruction uses hypermedia's interactivity through all program's steps. In this kind of system the follow was very important because it permits to evaluate the importance of each information provided by the system improving the learning process.

Using a non-linear programmed instruction and hypermedia is necessary an auxiliary engine to manage the student path and decide the next step considering your prior steps. This engine permits also a complete logging system.

This system is being evaluate by a methodology using different evaluation protocols (users log, user satisfaction form, etc.) and the paths followed by users in navigation map.

System. The student-program interaction occurs by answering the question. When the student chooses one alternative in a question screen a specific answer screen will be shown. With the feedback provided by this screen the student gets additional information.

Screens can show links that send the students to the glossary or to the simplified diseases catalog where he will find definitions for technical terms and short descriptions of the genetics diseases used as examples in the questions and answers. The system works as a tutorial orienting students for further studies, through given reference.

This system was implemented in layers for PC compatibles using *Multimedia ToolBook 3.0* and Delphi, separating the user interface and navigation system. The layer implementation becomes system maintainability easier permitting changes in navigation map without impact in system interface and contents consistence.

The system includes general concepts, inheritance models and cytogenetics for undergraduate medical students and is based on multiple choice question with images, diagrams and animations.

Evaluation. Usually the educational software efficiency has been evaluated using students' grades. But it would be evaluate as other educational materials, as books or lectures, including an analyses of how the learning process occurs, plus a software evaluation.

The system proposed by the authors is being evaluated by a methodology including analysis of a protocol to evaluate the system efficiency as a didactic material, a protocol to test the software quality and user satisfaction and the frequency of paths followed by users in navigation map, besides comparing students' grades.

Conclusions. This system still being evaluated but the methodology used to construct and to evaluate are new and would be an alternative way to make this. The authors want to discuss about educational efficiency of this kind of software in medical education.

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References

1. International Journal of Educational Research. Implementation of Computer in Education. Oxford: Pergamon Press. 1991;17;1:122 p. [Plomp T & Moonen J (Guest Editors)]
2. Santer DM et al. A comparison of educational interventions. Multimedia textbook, standard lecture and printed textbook. Arch. Pediatr. Adolesc. Med., Mar 1995;149,3:297-302.